

July 1994

TOSS - UP

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NEWSLETTER

EDITOR / PUBLISHER: Bob Swet, 2600 E. Ponderosa Drive #15, Camarillo, CA 93010 -4737, (805) 388 - 9619

UPCOMING EVENTS

MONTHLY MEETING: Wednesday, July 27th, 7:30 PM, Cameron Center, Thousand Oaks, CA

MONTHLY CONTEST: August 14th, 9:00 AM, Redwood School, Thousand Oaks, CA
CONTEST DIRECTOR: Mike Reagan

SC² CONTEST: July 31, 9:00 AM. Hosted by Harbor Soaring Society

MAY MEETING NOTES:

OLD BUSINESS

- 1) None to report.

NEW BUSINESS

- 1) TOSS will hold the TOP GUN 2 Meter Contest on July 10. We need members to come out and help as well as participate. This will replace the normal monthly contest.

- 2) Edgar Weisman described how to build strong, light weight foam core / fiber glass / balsa stabs. His trick is to use 3/4 ounce fiber glass, coat it with epoxy while on a sheet of wax paper. Squeegee off ALL the excess. Then lay it up on the 1/32 inch balsa wood at a 45 degree angle to the wood's grain. Take the balsa & glass and place them on the foam. Put the entire assembly into the foam saddles and add weights until the epoxy cures. The claim to light weight construction comes from only the absolute minimum epoxy is ever used. Samples provided were extremely light and strong. Second only to air bagging maybe.

- 3) Mike Reagan brought and gave away various types of reflective films.

RAFFLE WINNER

The lucky winner of the June raffle was given his choice of four sailplane kits. Dane Vannett was given the task of selecting the winner who happened to be himself. After a barrage of accusation of fixing, Dane selected the THERMAL BUSTER hand launch glider.

The July raffle winner will also have his choice of the remaining kits. Rumor had it, that if the raffle kitty would permit it, there may be two kits up for grabs. Just remember, the bigger the kitty, the bigger the prizes. So please come on out and participate.

TREASURER'S REPORT

As of 7/22, TOSS has \$330 to its name along with approximately \$250 plus in debts.

2 METER TOP GUN CONTEST

Finally, after two major contests ('93 Top Gun and the '94 TOSS SC²) were almost blow outs, we got lucky and had nearly perfect weather for a contest.

Sun, light winds and good thermals is what the Contest Director (B.J. Weisman) had ordered and was granted by the Gods above.

Turn out was extremely poor, with TOSS members making up a large majority of the flyers. My guess was that our reputation for high winds kept alot of the better flyers away. With only eleven participants, only one class was flown (Expert) and the entry fee was reduced to \$20. Cash prizes was given to the top three finishers and engraved mugs for first through fifth positions.

We flew a 3, 5, 7, 5, 3 minute rounds with 300, 200, 100, 200, 300 landing points. Pilots were given one throw away round. This kept final scores tight with just 16 of a possible 4000 points separating first from third positions.

Needless to say, fun was had by all. The equipment worked well and the waiting for launch period was minimal. I am sure that all of us are waiting for the next time this contest is held.

Bob Swet



2 METER TOP GUN CONTEST RESULTS

	CONTESTANT	PLANE	SCORE
1	B.J. Weisman	Super V	3951
2	Don McNamee	Super V	3936.2
3	Joe Wurts		3935
4	Phil Halford	Super V	3886
5	Mike Reagan		3840.2
6	Edgar Weisman	Super V	3763
7	Art McNamee	Super V	3756
8	Greg Johns	Super V	3679
9	Bob Swet	OLY 650	3597
10	Larry Jimenez	Spirit 2M	3136
11	John Spoer	Shadow	3134

For Sale

Toss Key Chains.

They have the 1994 TOSS logo and can have a message if specified. They are made on CAMM (computer-aided-milling-machine) and drawn on a Autocad based program (Versacad). They measure 1 3/4" x 3". The price is \$2.25 per key chain with key ring. Also for an extra \$0.75 you can get a oak stand stained and all. As a bonus you will be donating a percentage of the cost toward TOSS. If you want to see one come to the next club meeting and you'll also see the new trophies to (basically the same but say first place in such and such and mounted on a oak stand). For info. or orders call (818) 889-2788 and ask for Jonathan Spoer. Please Call weekdays 4pm. to 9pm. and weekend 10am. to 9pm. (all times are pst.). So buy one now and be one of the first to have one like the new TOSS trophies.

SAIL PLANES for Sale:

Contact Art McNamee (805) 526 - 6292 if you are interested in any of the sail planes listed below.

2 Meter SHADOW - Fully Assembled and painted ... \$250

BANSHEE - Fully Assembled and painted ... \$200

3 Channel 2 Meter - Fully Assembled and painted ... \$100

PARAGON - Fully Assembled and painted ... \$150

SAIL PLANES for Sale:

Contact James Cowley (805) 568 - 0077 if you are interested in any of the sail planes listed below.

Combat Models - F16 FALCON Slope Soarer - Fully Assembled and painted - Ready to Fly, 48 inch Wing Span - 60 ounces, Futaba 5UAF - 5 Channel PCM radio (Channel 34), Two S148 Servos with L&M ball bearing conversions Battery and Charger ... \$300

Scorpio - FALCO 180 Slope Soarer - Ready to Cover, 70 inch Wing Span - Eppler 374 Airfoil, Futaba 5UAF - 5 Channel FM radio (Channel 28), Three S148 Servos, Battery and Charger ... \$275

Culpepper Models - CHUPEROSA Sailplane - Fully Assembled - Ready to Fly, 60 inch Wing Span - 20 ounces - SD7037 Airfoil, Two RCD Apollo 20 Servos, Tekin 2 Channel AM Receiver, 270 mA Battery pack ... \$150

Douglas Aircraft - QUICKSILVER Slope Soarer - \$50 52 inch Wing Span - SD6060 Airfoil, New KIT

JR - 347 FM Transmitter (only) - \$200

SAIL PLANES for Sale:

Contact Rich Warrick (805) 640-0589 if you are interested in the sail planes listed below.

COYOTE Slope Plane - Built up wing, Partial completion of fuselage, one roll of slmon color monokote ... \$50

3 Channel Futaba radio, Model FPT3S transmitter (Pre - 1991) on 72.240 MHz ... Best Offer

SAIL PLANES for Sale:

Contact Ed Oldenburg at (805) 499-6354 if you are interested in the sail planes listed below.

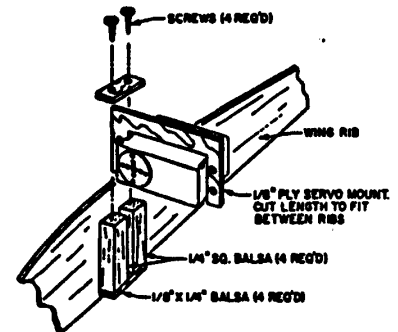
COMET Cross - Country Sailplane: Completed Larry Jolly Design. Set a couple of club records years ago at Taft. 14 foot wingspan. No Radio. Need the space. \$300

FALCON Thermal Sailplane with graphite bagged wings. Weighs 80 ounces. Would make great slope ship..... \$300

PIXIE by Dodgson \$200

REMOVABLE WING SERVO

Jerry Hamelman, of Rochester, Indiana, submitted the diagram on how to mount a servo in a wing so that it can be easily removed for use in another plane. Jerry used 1/8" plywood to fabricate the servo board



shown in the sketch. This should be cut to the length between your center section ribs. The servo should then be mounted as shown in the drawing. Glue four 1/4" square balsa strips to the sides of the ribs as indicated. After this has been completed, insert the board with the servo mounted, and cut 1/4" x 1/8" balsa and screw on the bottom as shown. If the top sheeting is not in place on the wing it will be necessary to glue a strip on top of the 1/4" x 1/4" balsa stringers. To remove the servo all that is required is to remove the four screws and the linkage to the aileron.

*From SULA 11/92
NEWSLETTER*

FROM MODESTO R/C
THERMAL TOPICS
4/94

STILL MORE F3J STUFF!

The following article was originally printed in the Waco Technical Newsletter of January, 1994, and was lifted, verbatim, from the pages of the "Eagle's Nest", the newsletter of the Sacramento Valley Soaring Society, Ron Kucera, Editor. Thanks for its use!

How To Launch By Handtow - F3J Style

from Waco Technical Newsletter, January 1994

Last year handlaunch gliders (the ones you throw) saw a tremendous burst in popularity worldwide. That trend will continue and will usher in an era of human-powered launch events. The next of these events to gain popularity in the US will be F3J which uses a handtow launch. The Europeans already have an international F3J circuit which draws hundreds and hundreds of competitors from dozens of countries. Last year there were five major events on the European F3J circuit. This year will see the birth of a US F3J Gran Prix Circuit. Anticipate cash prizes in the four figure range at each contest and a level of competition magnitudes beyond anything else ever seen in R/C soaring. Hadn't you better learn more about hand towing? WACO has done some basic research on the subject and here is what we have learned.

The Airplane. The type of airplane required for handtow launch is not what you might imagine. A lightly constructed floater will not do! The loads that can be placed on a wing by a handtow launch are far greater than those imposed by the strongest of electric contest winches. Hard to believe, but true. The main reason for this is the greater efficiency of a handtow launch. Since there is no

long run of line out to a turn-around, the 150 meter hand tow line is about half as long as the typical winch launch line. The shorter more direct connection to the model means less stretch in the line and less energy loss due to the line dragging on the ground. Handtowing is not done with a retriever. The retriever is a handy little gadget which robs the winch of about 25% of its power. The motors used to launch by handtow are actually more powerful also. An electric motor may be rated at 2 horsepower but when it is used in less than the optimal situation for which it was designed (such as the on/off mode of winch launching) when it heats up and when the battery gets a little low, the actual power output is much less than half of rated. Humans, on the other hand are rated at about 1/3 horsepower continuous, but are capable of short bursts (about 30 seconds) of almost 3 horsepower, and a well trained athlete can put out over 1 horsepower for hours on end. If you doubt this, consider professional cyclists who average over 30 mph in 60 mile solo rides against the clock. Figure out how much horsepower is required to push a bike and rider at that speed. I'll save you the math, it's over 1 horsepower, even on



THE EAGLE'S NEST

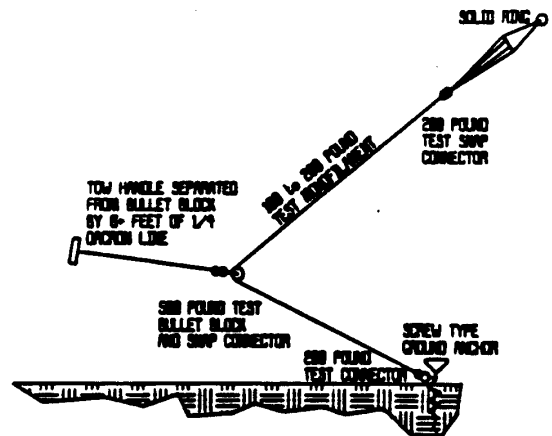
MARCH 1994

level ground. The bottom line is that handtow can deliver a spar-shattering launch, particularly if there is a little wind. Your wings need to be every bit as strong for a handtow as they are for winch launching.

In International F3J, a pilot is allowed to use two models, and may swap at any time, even in the middle of a round. The models being used now in Europe may not actually be the best for the event, but what seems to be popular is about a 130 inch span good all-around thermal duration ship for most conditions, and a more highly wing load design for when it blows. Steian Eder of Germany flying a WACO MAGIC won the European F3J League Championship this year, but his was the only MAGIC flown. Other designs which appeared in greater number included The Czech *Ellipse*, the British *Algebra*, and even a *Legend* or two.

The Launch Equipment. Equipment can range from very simple to very complicated. At the simple range of the chart, all that is required is 150 meters of 100 to 200 pound test monofilament towline with a handle and human tower on one end and a parachute and tow ring on the other. On a given signal, the tower tows, the plane is released, and if all goes well a launch to about 500 feet is attained. This system works well with a little

breeze, but if the air is calm, the typical human has a hard time maintaining the line speed required for a good launch. This is where complication sets in. To double the line speed a 1:2 turning block can be placed in the line and the dead end attached to a stake in the ground. With this setup the runner needs run only half as fast but has to pull twice as hard. Caution! If you use



this type of setup, make sure that the anchored end of the line is attached to a stake that will not pull out of the ground and become a missile. The typical high-start stake will not do. Use a screw type aircraft holddown, or a stake which can be driven into the ground at least 18 inches. Your tow-man will be standing very close to this stake at the beginning of the tow, and the force on the stake can approach the breaking strength of your tow line. Should the stake come



loose, it will be launched a great distance at a great speed.

Line-speed amplification schemes can be carried to extremes. It is reported that the Italians, strongly influenced by F3B, showed up at least one contest in Europe this Summer with a 1:5 pulley arrangement with two large and strong men towing. With this setup and a little breeze, end airspeeds of 80 to 100 mph are within the realm of possibility. They were attaining 300 meter launches (nearly 1000 feet) in almost calm conditions with F3B style ships. This is really going overboard. I predict that for the coming season, at least in the US., the number of tow men and pulleys will be restricted to one. Why complicate a very good format?

What You Need and Where to Get It. Start with 150 meters of good quality monofilament line. The nominal strength should be at least 100 pound test if you plan to use a tow pulley (and you should). With monofilament you get what you pay for, and the more expensive lines are going to last longer, be more flexible, and perform better all around. People with more experience than I have recommended "Jen-Kai" (7 Seas Brand, spelling questionable) as a good quality line. Lighter line is better for lighter models, and heavier for the F3B style ships. Go to a saltwater tackle shop for towline and connectors. If you

get serious you will need a selection of towline in tests from 100# to 200# and spares for each. The good guys lay out an extra line at the start of each round in case their primary line breaks or fouls. They use different weights of line for different wind conditions and models. To store the line you will need a reel or reels Graupner makes a reel with a high speed retrieve which sells for about \$30. The electric cord reels sold at most hardware stores will also do for about \$5. If you partition the drum on the electric cord reel with plywood or Mylar spacers, three separate tow lines (or more) can be stored on one electric cord reel.

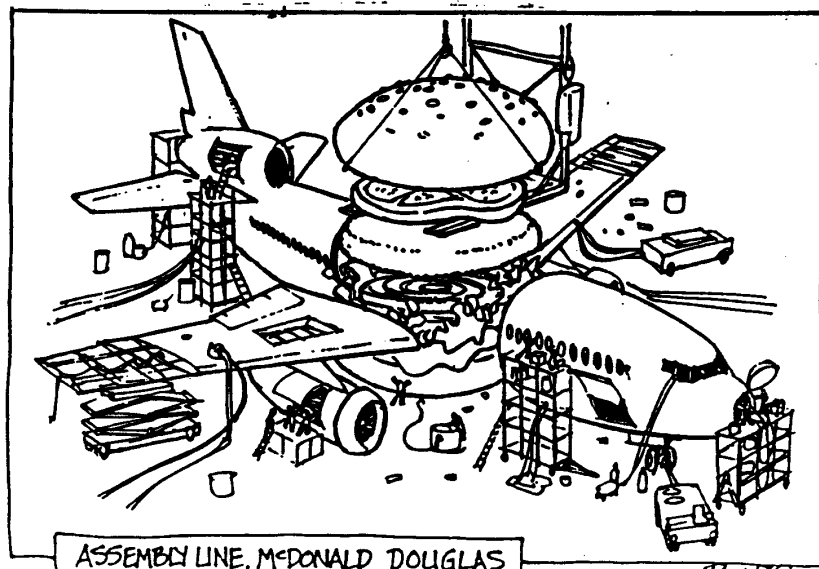
Use solid rings on the parachute A split ring will explode on the first windy launch. 200 pound test or better snap swivel fishing tackle connectors or sailing type sister hooks should be used to attach the parachute to the line and the line end to the anchor. These connectors make it possible to swap lines rapidly.

A good tow handle can be made from a piece of 1 inch wooden dowel about 5 inches long. Drill a hole through the middle of the dowel, counter sink the hole. Run a length of 1/4 inch dacron line through the hole and knot it. Attach a 400 pound test connector on the other end of this lanyard with a strong splice or a knot. The length of the lanyard is optional, but the longer the

From Pro-Esto R/K
Thermal Topics 4/84

LIFTED FROM THE LONG ISLAND "SILENT FLYER"

■ Aircraft models. See a display of aircraft models created by high school students in World War II, a working Spitfire gunsight, a complete training room, a target kite and more. The models are on exhibit at Reid-Hillview Airport, 2555 Robert Fowler Way, San Jose, at 10 a.m. Monday through Friday and the first Saturday of each month. Also on exhibit at Reid-Hillview Airport is Mike Boss' "The Golden Era," and Larry Lapadura's acrylic paintings of WW2 subjects. For more information, call 259-3360. (408 A.C.)



FROM MODESTO R/C
 THERMAL TOPICS 4/94

lanyard, the less chance of injury to the tow man if the towline should break or the stake be pulled out of the ground. The block to double line speed can be homemade or can be found at marine supply stores. Look for a bullet block with a wire sheave which is rated for at least 400 pound loads. Harken and Schaeffer make ones which you should be able to find for less than \$15. The tow handle can be used with or without the block. Attach the handle directly to the end of the tow line to use without the block. To be strictly legal, the towline length will have to be shortened by the length of the tow handle lanyard. The anchor stake should be as noted above - either a very long spike or a screw type anchor. Look in the chain department of your local hardware store for dog tie out stakes.

Technique. This is an area where I would like to have more experience, but I will give you the benefit of what experience I have. To begin with communication between the tow man and the pilot must be well established. Before you hook your plane to the towline, make sure that you and your tow man understands the signal to hold and the signal to tow. Unlike a winch, once the tow man starts, there is no easy stopping him. The first time you try it, caution your tow man to run continuously once he has started, and to be

prepared for a sudden release. On my son's first tow he ended up sliding on his face about ten feet in the mud when towline tension ended abruptly.

Handtow launches happen a lot quicker than winch or highstart launches. If you are tempted to practice with towlines shorter than 150 meters, realize that the shorter the line, the less the stretch, and the quicker things are going to happen. Also, the higher the test of the line the faster things are going to happen. A good handtow launch will be all over in a third the time required for a winch launch. Don't try to hold on to the model too long. You will find it difficult to do, and you may damage the model. Line tension builds up very quickly. Don't expect to stay on the line too long, both the climb and zoom portions of the launch happen very fast.

The tow man may want to consider wearing long sleeves and a glove on the tow hand. A line break can deliver a painful lash, and the broken end of a monofilament line can cut. The longer the tow handle lanyard, the more removed the tow man is from this set of hazards and the possibility of being struck by a pulled-out anchor stake.

The rated breaking strength of monofilament line is determined with some moisture content in the line. Monofilament which is allowed to dry out will become brittle and lose some of

Tricks of the Trade

When scratch building a model we often need to trace our parts onto our balsa before we begin cutting. Here is a neat idea that works very well. Make a photocopy of your plans and then just iron the photocopied image onto the balsa as shown in the drawing. If you try it once, you'll never go back to tracing. Editor's note: This method also works when transferring designs onto t-shirt or sweat shirt fabric for painting or other decorative crafts.

from RC Aeromodeler
 Bill Hart - Editor

Metric Drill Sizes			
Our European kits specify metric hole sizes like "drill a 3mm hole". Here are some common conversions to USA size drill bits. Note that the "Fractional Inch Size" is the next smallest fractional size. These will be slightly undersized holes.			
Metric (mm):	Inches ("):	(Drill Number):	Fraction (") (undersize):
1mm	.0394	61	1/32
1.5mm	.0591	53	3/64
2mm	.0787	47	5/64
2.5mm	.0984	40	3/32
3mm	.1181	32	7/64
3.5mm	.1378	29	1/8
4mm	.1575	22	5/32
4.5mm	.1771	16	11/64
5mm	.1968	9	3/16

From MEXICO R/C
THERMAL TOPICS 4/94

it's strength. To make your line last and to get the best launches, periodically wet out the line.

Physical Requirements. If you don't have a disability which prevents you from jogging, you can do handtow. Expect to have sore legs the first time you try it. I have seen sixty-year-olds hand towing and grinning like school boys. I have seen these same sixty-year-olds do double gainers on the sod when a tow line broke. It is physical but not beyond your capability, It is a lot of fun, and a good way to get in a lot of flying. Give it a try!



**The Soaring Union of Los Angeles And
California State University Dominguez Hills
Host
The Second Annual Summer Soaring Festival**

AUGUST 20-21, 1994.

THIS IS AN AMA SANCTIONED EVENT; ALL AMA RULES APPLY

LOCATION: California State University Dominguez Hills, Carson, California.

CLASS: Unlimited

Entry Fee: \$25.00 (No entries after August 7, 1994.)

Awards: 1st through 10th and Top Team. (Top 4 dues paying members of an AMA sanctioned club)

Raffle: Raffle tickets will be sold at the contest. Drawing will be held after the last round.

T-SHIRTS: Available with pre-registration only.

Pilots Check in: Friday noon to 7 p.m. and Saturday 7:30 a.m. to 8:45 a.m. (on the field)

Pilots Meeting: Saturday & Sunday, 8:45 a.m. First Flight, 9:00 a.m.

TASKS:	SATURDAY, AUGUST 20	SUNDAY, AUGUST 21
	Round 1 - 4 minute P/D	Round 6 - 3 minute P/D
	Round 2 - 6 minute P/D	Round 7 - 5 minute P/D
	Round 3 - 8 minute P/D	Round 8 - 7 minute P/D
	Round 4 - 3 minute P/D	
	Round 5 - 5 minute P/D	

All rounds scored 3 pt's/sec. Carrier Type Landings, 40 pt's max. per landing.

Rahn Winches & Retrievers, @ 900 ft.

On-Site Free RV Parking Available. (No hookups)

Motel Information and Map will be sent with confirmation.

Information:	C.D.	Chairman	Co-Chairman
	Randy Spencer	Kevin Andersen	Ron Brown
	(310)318-1063	(310)372-2585	(310)328-8684

SULA SUMMER SOARING FESTIVAL ENTRY FORM

(NO ENTRIES AFTER AUGUST 7, 1994.)

Frequency Choices: 1st: _____ 2nd: _____ 3rd: _____ Club/Team _____
Name: _____ AMA # _____ Phone No: (____) _____
Address: _____
City: _____ State: _____ Zip: _____ R/V Parking? Yes ___ /NO ___
T-shirts @ \$15.00/ea. M ___ L ___ XL ___ XXL ___ plus Entry Fee @ \$25.00 = TOTAL \$ _____

(Please make checks payable to: "SULA")

Mail entry to: SULA
c/o Ron Brown
2933 Sonoma St.
Torrance, CA 90503



THE MODESTO R/C CLUB PROUDLY PRESENTS
THE FIRST F3J SOARING CONTEST IN NORTHERN CALIFORNIA
SUNDAY, AUGUST 14, 1994

All radio control soaring pilots are invited to participate in a day of hand tow fun! The Modesto R/C Club is sponsoring a F3J (hand tow, man-on-man) contest, utilizing the current rules as provided by the CIAM in Paris. The flying site will be the Beyer High School athletic field, located between Sylvan Meadows Drive and Sylvan Avenue on the north and south, and just east of Coffee Road, in north-east Modesto. On field registration will be from 0800 hours to 0845 hours. The pilots meeting will begin at 0845 hours. The contest will officially begin at 0900.

Each competitor will fly a minimum of five (5) rounds. More rounds will be flown if time allows. Each competitor will have a preparation time of five (5) minutes with his helper(s) to set up their hand tow line. Each competitor shall furnish his own tow line, which shall consist of a non-metallic line no longer than one hundred fifty (150) meters. No elastic or mechanical devices are allowed, excepting pulleys. All tow lines must be retrieved by the end of the working time.

The working time will begin at the end of the five minute preparation time. The working time will be ten (10) minutes. During that time, each group of four contestants will seek to fly a maximum time within that duration. Each contestant will be allowed two (2) attempts at flight. At eight minutes, a two minute warning horn or bell will notify contestants of two minutes remaining in the flight. Each flight score will be composed of one (1) point for each second of flight time, less a thirty (30) point penalty for overflying the group time, up to a maximum of one (1) minute. A zero score will result for overflying the group's working time by more than one (1) minute. A horn or bell will end the ten minute round.

Each contestant will be assigned a fifteen (15) meter landing circle with a tape graduated in meters. Landing bonus points will range from 100 to 30 points, with no landing points outside the circle. Flight times will start from release of tow to either (1) contact with the ground, (2) contact with a ground-based object, or (3) completion of the group's working time.

After working time ends, the flyer in each group having the highest total of flying and landing points will be awarded a corrected score of one thousand (1000) points for that group. The remaining competitors will be awarded a corrected score based on their percentage of the group winner's total score.

Trophies will be awarded for first, second and third place finishes. The entry fee will be as follows: \$5.00 for those registering by mail with post marks on or before 30 July, 1994. Entries postmarked after that date or at the field will pay a \$10.00 entry fee. Early entrants will have first choice of primary frequencies. Late entrants will be restricted to frequency choice. AMA membership required. FCC license required for ham band transmitters. Competitors are requested to have an alternate frequency.

For a copy of the CIAM F3J rules as published in the September, 1993 issue of "SOARER", the newsletter of the British Association of R/C Soarers, and the 2/3/4-1994 issue of the Modesto R/C Club newsletter, "Thermal Topics", please submit \$1.00 and a stamped, self-addressed envelope to the contest director.

Name: _____ Street address: _____
City: _____ State: _____ Zip: _____
AMA #: _____ Home phone #: _____ Club: _____
Frequency first choice: _____ Second choice: _____

Make checks payable to : Modesto R/C Club. Mail applications to Dave Darling, CD, 2705 Harvest Road, Modesto, CA 95355-3430 Please note: Entry fees are non-refundable, unless your first and second choice frequencies are not available. In that event, your entry fee will be returned.

THE FLEDGLING - BUILDING TIPS FOR THE BEGINNER

Tom Dean

STEP 1. SETTING UP YOUR WORK AREA

The dining room table with a view of the TV is an ideal place to build your model, unless of course you're married, in which case you will be made aware of many reasons why you and your *\$#%@ stuff belong in the garage.

You will need a flat table, at least as big as your longest wing section. A door on two saw horses, a sheet of plywood, a card table, etc. will do fine. Just remember it must be flat since your wing will take on the shape of your table as you build it. Lay a sheet of poster board or something soft enough to stick pins into on top of the work surface.

Make sure you have plenty of light, and a chair that is both comfortable and willing to get covered with wood dust & glue. If you have a cat, you'll find that it will probably wander around up there when you're away, so have some way to cover it up at night (the table, not the cat).

STEP 2. GATHERING THE TOOLS

These are the tools you absolutely must have:

- An Exacto knife with extra blades
- A small hobby saw
- Thick & thin CA glue
- T-head pins
- Scissors
- Steel straight edge, or scale (ruler)
- Sandpaper-various grades
- Monokote iron
- Heat gun (no, a hair dryer won't work)
- Roll of waxed paper
- Epoxy, 5 min. & 30 min. (if the kit requires)

Here are some things that will be most helpful:

- Clothes pins
- Rubber bands
- Masking tape
- Cutting board (hard rubber, wood, cardboard)
- Popsicle sticks (for stirring epoxy)

- Sanding block
- Small hobby plane (razor blade type)
- Exacto set (all those different cutters)
- Small square
- Set of Jewelers screwdrivers

STEP 3. CONSTRUCTION

Before you begin building, study the plans. Read all of the instructions. Make sure you have all of the things required to build it. Start a list of the things you are going to need to get. Unless you really know what you are doing, plan on building it the way the instructions say.

Most plans are laid out in such a way that you can cut apart the various sections, the wing panels, rudder, stabilizer, fuse etc. This makes it much easier to work with. Pin or tape the plan section that you will be working on first onto your work surface. Cover it with waxed paper, (this will prevent the parts from being glued to the plans. You want to keep the plans usable for later repairs.

The things to be most concerned with in building a plane are making sure that the components are straight, strong, and light. Install the radio equipment, and battery where shown on the plans. The balance of the plane is vital.

If you are not familiar with CA glue (Zap), there are some things to be aware of. The thin CA is very fast drying (a couple of seconds), but doesn't fill in gaps as well as thick CA which takes about 1 minute to dry. CA also has a bad habit of passing a puff of gas when it sets up. Don't look directly down at the joint as it cures, it will burn your eyes. If you do, by the time you've used some of those words you've been saving for just such an occasion, the pain and tears will have passed. Also you will discover that CA runs. It especially likes fingers. You will glue your fingers together on a regular basis, just pull them apart. The technique for using CA is to clamp, pin or hold the parts together and apply a drop or two of CA to the joint. One drawback of CA is that it doesn't stick to itself very well. If you already used it on a part, sand off the surface to be joined to expose fresh wood before re-gluing.

Your kit may or may not require epoxy joints. Make sure that the parts to

be epoxied together fit properly before mixing the epoxy and catalyst. Dry fit the parts. Decide how you will clamp the parts together while it cures (you don't want to have to hold them). Use the type called out (5 min. or 30 min.). The 30 min. is stronger! Mix the epoxy & catalyst on a piece of waxed paper with a popsicle stick or balsa scrap. If you find that something moved while it cured, don't panic. Apply some heat to the area with your heat gun, (It won't require much), and apply pressure on the errant part until it mashes into the proper position.

Sanding is the most tedious part of building the kit. It also does a great deal in determining the aerodynamics of the plane as well as the general workmanship quality. The wing is the most important component of the plane. The sanding of the leading edge of the wing requires the most care. Don't change the shape of the airfoil by over sanding the tops of the ribs. Don't sand the trailing edges to a razors edge. Leave about a 1/16" flat. Fill in gaps using a lightweight filler, or if you want to cover with transparent monokote, fill the gaps with thick CA and sanding dust. Take your time. You'll want to hurry up and cover it to see what it looks like. It will look awful if you don't do the sanding right first.

Keep the scraps of wood from the kit. These will come in handy for future repairs.

Next month: COVERING AND FINAL ASSEMBLY

Soaring Corner

by Tom Hagny

First thing this month is a special "Thank you" to Kent Henderson of Painter's Supply for the very informative seminar that he gave for our May meeting. For those of you that did not make the meeting you missed an excellent presentation. This month's article is borrowed from the April issue of the Silent Wings Soaring Association newsletter and was authored by Curt Nehring and is entitled *Flaps*. Due to the extensive amount of information contained in this article and the limited amount of space for my column, it will appear in two parts. Part II will be featured in the July issue of *Thermals*. And now Part I of *Flaps*.

I know very few R/C sailplane pilots that couldn't stand to get better launches, thermal more effectively, descend from critical altitude more safely and generally benefit from increased glidepath control on final approach. With practice, a flapped-wing will easily accomplish all these tasks.

Launching

Good launch height is an initial strategic step in setting-up "any" thermal flight. Without it, it's difficult to explore for lift. Of course, there are exceptions; early morning "bubbles" that haven't separated, etc. But that's another column and this section intends only to address the typical launch. It's fairly common knowledge that all gliders can be adjusted for a more vertical climb by moving the towhook rearward or by pulling a slight amount of up elevator. Although the towhook should be mounted in the correct location from the start, an increased vertical attitude can also be accomplished by using a bit of flap. Most would obviously prefer a preset to handle this task, but I've seen it done on the left stick. If the glider is equipped with ailerons, they can also be drooped to increase lift and discourage any tendency to tip stall. This type of stall is fairly frightening, usually producing a sudden snap to the left at the point the pilot releases the model after building-up line tension. Warps and unbalanced wings or a bad toss create this unwanted reaction (ask me!), but it's almost always because the pilot didn't "throw" the airplane. For most, the easiest way to recover is to stay solid on the pedal and apply opposite rudder. Don't use the ailerons. Kit manufacturers will usually suggest the amount of control surface deflection for launching, but a good starting point is ailerons down $\frac{3}{8}$ " and flaps down $\frac{1}{4}$ ". Occasionally, a bit of up-elevator (equivalent to about 2 - 3 clicks of the trim) will also help in the mix. Some of the figures used in this article come from the Mako construction booklet, but are consistent with

most of the hi-tech kits currently on the market. Experimentation is the key. Of course, if you find yourself breaking winch lines frequently, don't wait for Mike to ask you to decrease your launch camber! Also, downwind and the "average" hi-start launches are best accomplished with little or now camber enhancement.

Zooms

I only mention this because it's something that should not be attempted with the flaps deployed. The flaps must be retracted just prior to coming over the top to reduce the possibility of over-stressing the wing and destroying the model. Although the zoom is an integral part of the launch, particularly during the contest season, it requires a lot of practice and is seldom executed correctly. Although somewhat spectacular looking, many less-experienced pilots will actually fly past the turn-around, severely dive the glider, then pull full "up" elevator only to lose altitude. This defeats the purpose. Once the bottom of the wing is visible, give a little down elevator to get off tow and let the sticks re-center. The air speeding over the wings create lift which translates into altitude. Watch Mike Deckman launch the Thermal Eagle, or any of the guys at the Masters; very seldom will you see a poorly executed zoom.

Sink

Sometimes we'll luck-out and launch into a sizable thermal, but more often we'll encounter the "sink hole" that almost always precedes the lift. If isn't obvious, the tail is usually a good indicator and will appear to be "dragging". The rule is to speed-up in sink and slow-down in lift. By reflexing the flaps (up approximately 3.32") and if you have ailerons (same amount). The effect is to un-chamber the wing so it reacts like a more flat-bottomed airfoil (i.e., SD3021). Then a slower undercambered wing like the SD7037 can be made to penetrate through the sink without any appreciable loss of altitude. From personal experience with 7037 on both my Mako and Falcon 880, I can't say that reflexing was truly effective and don't have a problem keeping up with the pack without it. Traditionally however, an RG15 will pull away from me with little effort. The advantage to the faster airfoil in the ability to travel through the sink to reach the next thermal. The drawback is that it doesn't signal lift as well and generally requires the eye of an expert flyer to work it efficiently. Roger Lackey once told me that when he first started flying the RG15, he wondered where all the lift went!

Continued next month...